Issue 16

June 2018

Utah Valley Amateur Radio Club

The UVARC Shack

Gearing up for Field Day

Time again to dust off the portable antennas, the outdoor rigs, and the old microphones ahead of our annual pilgrimage to the gathering of amateur gatherings: Field Day. It's a time when we test our ability to gather our equipment in short order and mobilize, to set up a remote HF station on emergency power, and make contacts all over the US and maybe the world.

Just like last year, you're invited to join us in this great adventure. And if you don't plan to get on the air, that's ok, because you're also invited to join our potluck dinner Saturday night, June 23.

In this issue of the *UVARC Shack*

Preparing for Field Day near Strawberry Reservoir.

Way to Be for KI7REQ in an on-air rescue. A visit to the rolling shack of WE7ATV and WE7SEW. *Brass Tacks* investigates HF antenna types. *DIY* shows what it takes to install a Pockrus J-pole on your own.

Dear Annette explains why many hams seem, well, elderly. *Events* spotlights the Utah Valley Swapmeet. New in *Side of Bacon* is a word search.

Please send your ideas, stories, updates, photos, questions, gripes, and breaking news to ***uvarcshack@gmail.com***

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Way to Be

Spotlight on our members

Paige Ishii, KI7REQ

On Saturday, May 5th, I was in my kitchen monitoring 147.120 MHz (the Intermountain Intertie) on my HT, a Yaesu VX-8R with a Signal Stick antenna. As I was listening, I heard a very faint call for help. I heard it twice, but I didn't hear anyone respond. Being a new ham, I wasn't entirely sure I would be able to transmit, but I gave it a try. I called out to the guy in distress and asked him to verify his call sign, since it was very faint. It was remarkable that I could hear him, because there were others on that frequency, but apparently they weren't hearing him.

A few seconds later he replied that he and his wife were stuck in a snow drift, and needed assistance getting pulled out. Could I contact the Uintah County Sheriff's office and have them send someone out? He had the GPS coordinates, and read them to me. Well, he didn't clarify which Uintah County he wanted, and it never occurred to me he might be in Wyoming! I spent the next 40 minutes calling four different sheriff's offices trying to determine where his coordinates landed them on the map.

I finally identified it as Summit County, Utah. The sheriff's offices coordinated together to determine whose area it was and who would ultimately be responsible if a rescue was called for. After calling the four different sheriff's offices, they told me that they couldn't offer a tow, but that they could call a tow company and have a truck go pull them out.

Well, when I relayed this to my stranded ham friend, he declined the help. It was a good thing he was in a truck and had gotten himself out of the snow by that time, and was working on getting out of the mud, ha-ha.

This ordeal started at a little after 3 pm, and concluded at about 6 pm. The entire time I was a little stressed, but I felt responsible for this poor couple stuck up in the Uintahs. It was a Saturday, and it was getting late. The only help the sheriff's department offered was when they called to say they could do a rescue, if my ham friend wanted to declare that he needed to be rescued, which he also declined. All he needed was help getting out of a snow bank!

While I waited for information from the sheriff's departments, I looked up my new ham friend on *QRZ*, found his email address, and emailed him and also to verify his identity, since, when I called the sheriff's department, they asked a lot of questions, like who they were, their condition, etc. I didn't want to leave them stranded, and it gave me some peace of mind knowing I had done my due diligence in making sure I did everything I could to help out.

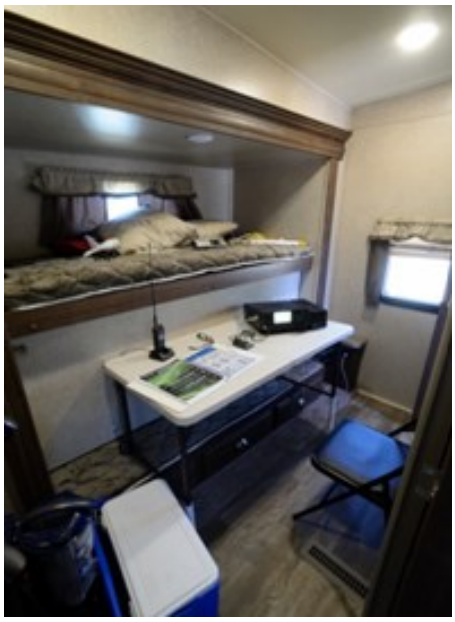
I was rewarded with a return email later that night. My new ham friend also radioed to say they had successfully made their way out of the snow bank and were on their way home. A week later, I received a very nice thank you note in the mail from my ham friend's wife. All in all, I felt very gratified that I could help out someone in need.

From the rest of us in UVARC, thank you, Paige, for your quick thinking!

My Shack

Highlighting the shack (ham equipment and room) of a member, to give others an idea of the possibilities that might work for them

Mart Gardner, WE7ATV and Glenna Gardner, WE7SEW



Glenna and I started planning our retirement about five years ago. One of the major items we planned to get was a 5th wheel RV, to enjoy camping in style. Over the next four years we looked at hundreds of RVs from bumper drags to 5th wheels. As we did, we developed the image of what the perfect RV would have. One must-have item is a place to put the HF and other amateur radios, and with one year to go, we started making final plans. I started asking other hams about what the perfect mobile shack would look like.

The big day came in June 2017 when I actually retired. We went right out and got our new 2018 5th wheel. There was no more looking, because now we knew just what we wanted. For one thing, a nice back room that would become the new mobile shack, with a little upgrading by me.

The new radio room has an inside door so when you're on the radio others can be in the living room watching TV, playing games, or just talking, without being bothered by the noise. The shack has its own restroom, so you don't need to cross the living room for that. There is a back door, too. You can work in and out of the shack, and never intrude on the fun going on in the rest of the RV.

The room has 12 VDC power right off the two batteries, and 120 VAC supplied by two wall plugs off the twin 2000 watt generators. It's got plenty of LED lighting and two windows, with room for three or four chairs around the small table. To keep you on the air in comfort, it also has forced air HVAC.

A small built-in box on the back wall not only provides a power port, but the pass-through for the coax to the outside antennas. On the outside behind the license plate you'll find a small round door, the other side of the pass-through. The door has a section that can be opened so the main door can be closed during use. Inside the pass-through is a small compartment where the coax can be coiled up for travel. This keeps it dry and clean until needed.

My Shack

continued

One thing we learned is the need for an outside disconnect on the coax cables. To accomplish this, we just used a coax cable connector between the inside cable and the outside cable that runs up to the antenna. The first time we put up the antenna, we learned how important it was to label the coax.

The antenna pole was 50% luck and 50% timing. Our son, who lives down in Annabella, where the photos were taken, was checking out yard sales when he came across this RV flag pole. It's all aluminum, so it's strong yet light, and he picked it up for $35.

The flag pole, now an antenna mast, has an aluminum mount that goes into the 2″ trailer receiver on the back of the 5th wheel. The mount is lined with a plastic insulator as well as a plastic sleeve on the mast. This is to insulate the mast from the RV. I've made some wood blocks for all the medial stabilizers to better insulate the 5th wheel. If the mast takes a lighting hit, the RV is insulated from the mast.

At the top of the mast there are two antennas. Both are from the handiwork of Carl Pockrus WE7OMG. First, the classic J-Pole 2 meter / 70 centimeter at the top of the mast. Just below that are two 40 meter *Hamsticks* attached to Carl's *Hamstick* base. The mast expands out to its full height with simple push buttons locks. The fully assembled mast and antennas are so light that one can easily pick up the whole thing in order to slide it into the receiver mount.

That's our new mobile shack. Glenna and I would like to invite you to stop by as see it at Field Day up at Strawberry this summer. 73 for now, and we'll be listening for you!

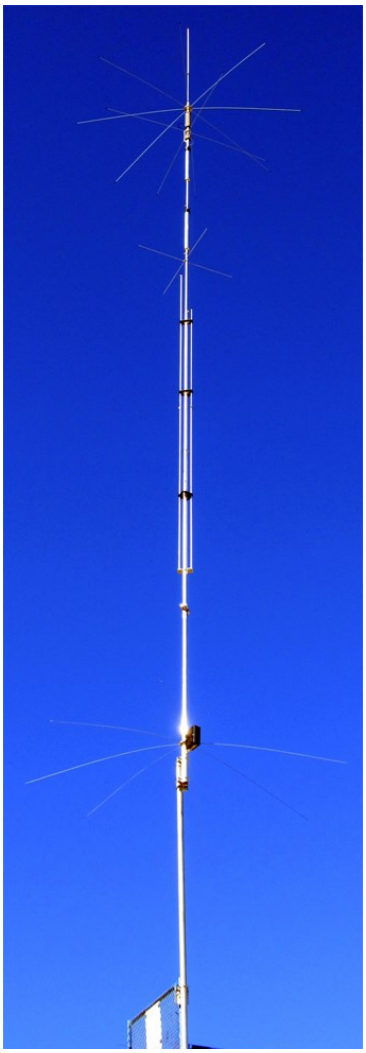
— Mart WE7ATV and Glenna WE7SEW

Brass Tacks

An in-depth look at a radio-related topic

Which HF antenna should I get?

You've earned your General class license, and now you're thinking of entering the wide world of *HF* (high frequency), which is ironically low frequency compared with much of the remaining amateur realm. After posting controversial questions on Facebook, you've finally decided on a very pretty, feature-rich HF rig, one that's supposed to deliver 100 watts to the airwaves, and maybe includes a built-in tuner. Being the educated ham you are, you already know what coaxial cable to purchase, and maybe even the connectors you're going to need. But that education has also taught you that you now face the most important question of all: *which antenna?*



Cushcraft R9 vertical

The decision about your HF antenna choice is not a trivial one. Some things to consider include home space restrictions, aesthetics (whether it looks nice with your home), and price. Ok, if money was no object, let's go straight for the jugular, shall we? You want a 200-foot *Rohn* tower, a *Yaesu* rotator system, *Cushcraft X7* beam antenna, with the *X-740* add-on, all connected by *Heliax*.

Well, you can dream, right? In reality, you live under the thumb of an HOA, your spouse will gladly allow an invisible antenna, and you only have $59 to spend on it. So, the goal is to get into HF territory within the limits specified by our environment. Not always easy, so let's break this down, and then arm you with the information you need to make an informed decision about where to go next. In general, we can categorize HF antennas into four kinds: *vertical*, *wire*, *beam*, and *other*, with some overlap.

Vertical HF antenna

Vertical antennas typically stand straight up, as the name implies, parallel with the pull of gravity, and more or less deliver a vertically (up-and-down) polarized emission. They're relatively inexpensive, work well for DX (out-of-country) contacting, but collect more noise than directional types. And it's fairly easy to design your vertical antenna to support multiple bands by installing *traps* on it, but traps do come at the price of excessive harmonics. (Trap design has been covered under *DIY* in the October 2016 issue of the *UVARC Shack*.) Vertical antennas are usually *ground-mounted* or *roof-mounted*, each with its advantages.

Brass Tacks

continued

Ground-mounted vertical antenna

Mounting your vertical antenna on the ground works well, as long as you have a really good connection to ground. But that requires two things: underground *radials* and a wet ground. The wetter, the better. In fact, if you could make your vertical float on salty seawater instead of dirt, that's about as good as you can get. And if you're mounting it on normal Utah ground, the more radials you install ***an inch or so*** below ground, the more you can make up for the lack of ground moisture. I'm not a fan of the "staple" approach, because vegetation has a habit of pushing things like radials up, catching in your mower.

Ground-mounting your vertical this way is great when it's free of nearby obstructions, like your house, your neighbors' houses, chain-link fencing, and forestry. Just don't forget about your radials when you go to dig that hole to bury your favorite pet some years later. Finally, the temptation to install or park future stuff (shed, RV pad, flower bed, trailer, swing set, etc.) on your vast, empty-looking real estate can be more than your spouse can bear.

Roof-mounted vertical antenna

If you choose to mount your vertical antenna on your roof, you're looking at a tall structure if you do it correctly. And if you want it to work well, once again you need to install radials. You should connect to the ground base of your antenna at least two radials per band, each about 1/4-wave long, installed symmetrically (on opposite sides from each other), and about 20 to 30 degrees down from level. Once again, while this vertical configuration tends to work well, your spouse might not appreciate its external beauty as much as you admire its function.

By the way, some manufacturers claim that their vertical antennas do not require radials, because they've installed loading coils that provide a match to the characteristic impedance. Problem is, the radials provide a *counterpoise* to the *radiator*, meaning they provide a complement to the radiating rod sticking up in the air, like a dipole standing on its end, so replacing the radials with a matching coil actually replaces half of your antenna with a circuit that does little to help with performance.

Brass Tacks

continued

Wire HF antenna

A wire antenna of one kind or another is typically the HF amateur's first antenna, primarily because of low-cost, availability, and ease-of-use. Most hams who want to get on the *lowbands* start out with a *dipole*, probably the most common HF antenna on the planet. A person can take a single trip to Ham Depot, and for less than $7, can build one of the very best-performing antennas that exists. Pretty much all you need is an SO-239 bulkhead connector, some PVC, and 35 feet of 14 gauge stranded wire, and suddenly you're joining an ongoing net in Iowa, or making contact with a kid throwing out CQs in Hawaii. This 20-meter version was featured in the July 2017 issue of the *UVARC Shack*.

But due to our dry Utah ground, you might need to get your dipole up higher than your house. Also, even though your dipole performs phenomenally, it's limited to a single band. Furthermore, you might not have the ability to get your dipole to stand flat-top, and will need to rely on a sloper, which is no more than a slanted dipole, or on an inverted-V configuration.

5-band fan dipole center section

One of the disadvantages of a dipole antenna is that it's designed for a single band. Like with a vertical antenna, it's not difficult to convert your dipole into a multi-band transmitter by installing traps on it. Otherwise, probably the two most popular alternatives are the off-center-fed (OCF) dipole and the fan dipole. A simple four-band fan design was featured in the October 2017 issue of the *UVARC Shack*.

G5RV antenna, coiled up

Yet another is the famed *G5RV* antenna, which requires plenty of height, tremendous patience, and some amount of skill to get working well in Utah. This is because the bottom of its vertical section needs to be raised as far above the ground and away from metallic objects as you can get it, due to its notorious ability to couple with nearby conductors. Additionally, its vertical ladder-line should be hung as close to 90 degrees from both horizontal elements as possible.

If you're looking to get into the really low frequencies (80 meters or 160 meters), but don't have several acres to spread out a large dipole antenna, an *inverted-L* might be your choice. Its design allows you to use part of the dipole length in a vertical section, reducing the necessary length of your property, but requiring greater height for the vertical section. Another, the end-fed half-wave (EFHW) wire antenna is like an inverted-L, but without the vertical section, which is replaced with an RF transformer for loading and matching.

Brass Tacks

continued

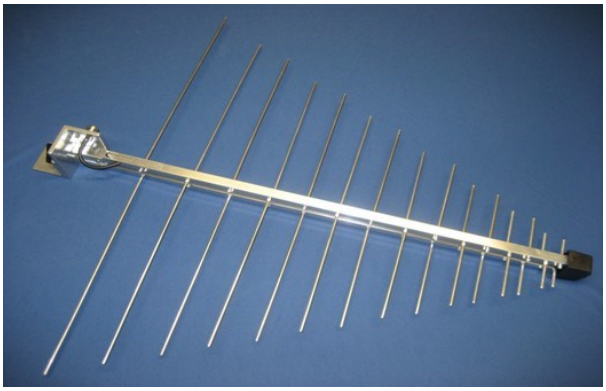
Couldn't a person simply create an antenna out of any old wire? Yes, you can, and that's referred to as a *random wire* antenna. Length and composition (copper, steel, aluminum, etc.) do not matter very much, but to make this conductor work as a transmitting line, you'll need a good *tuner* in many cases. Most tuners specify their maximum SWR or impedance (essentially, SWR = antenna impedance / 50 ohms), so that they can "tune" an antenna that presents an SWR of a specific amount or less. So, if your tuner's unable to handle a maximum SWR greater than 3.0:1 (very common with built-in auto-tuners), a random wire might not work for you, but if it can handle an SWR of, say, 10.0:1, you're probably in good shape with most random conductors.

Beam HF antenna

If you want a truly ham-looking antenna, a *beam* is for you. It performs well, brings in a lot less noise than a vertical, and looks fabulous. It does come with a few disadvantages, however. A beam requires a *rotator* (motor drive that you can work from within your shack, to turn the antenna in a particular direction), it might anger your HOA, and it's relatively expensive. Also, a beam tends to present a high wind load, meaning that it might not be able to withstand the same winds as well as a vertical, for example. Which means you'll probably need to install guy wires to the tower holding up the beam.

Yagi beam antenna

The two most common beams are the *Yagi* and the *log periodic* beam. A log periodic antenna is made from a collection of conducting elements of different lengths installed at specific distances apart, sized and spaced according to a somewhat logarithmic scale, to resonate on multiple bands. A Yagi antenna is similar, in that it's also constructed from a collection of conducting elements, but with one pair that's resonant at the *target frequency*, and others of sizes that are designed to sort of funnel the RF signal to maximize its forward gain.



Log periodic beam antenna

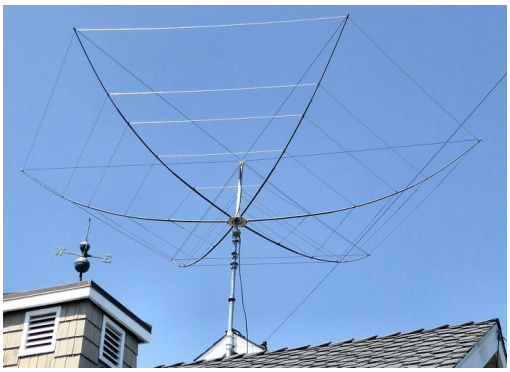
All the elements of a log periodic antenna are *active*, and typically support a variety of frequency bands, but suffer from limited gain. A Yagi typically only supports one to four bands, but usually exhibits large gain due to its *directivity*. The pair of elements that the feedline connects to, is the only part of the Yagi antenna that's active, but without the other (*parasitic*) elements, it's not much more than a dipole. A log periodic is a great performer, but a Yagi will typically set you back a little less.

Brass Tacks

continued

Other HF antennas

A *magnetic loop* is a great compromise antenna; that is, it performs well *receiving*, but not quite as well transmitting, due to its nearly omnidirectional (*cardioid*, actually) antenna pattern. It's made to be installed and worked indoors, but it's got a fairly large footprint (four to five feet in diameter), and must not be touched (3000 to 5000 RF volts can appear on it). If you mount it outside, well, that kind of defeats its purpose, because, if you can mount a loop out there, you can probably mount something better.



Hex beam antenna

Other types include portable antennas, like the *screwdriver* (for truck-mounting), *HamStick*, apartment antenna, *BuddiPole*, and *SuperAntenna*. Another is an outdated favorite, the *cubical quad*, a very large box-shaped antenna that looks like a wire outline of a Borg ship standing on your roof, nearly half the size of your roof. One more practical antenna you might consider is the *hex beam*, which looks like an upside-down umbrella, not as large as a cubical, but is a terrific performer.

Only for the sake of mention, other HF antenna types that I'll omit include the *EH antenna*, the *Hentenna*, the *Zepp*, the *Beverage*, the *Rhombic*, the *delta*, and the *doublet*. HF antennas can be designed in many configurations, and I've decided to only discuss the most popular types here, and leave the rest up to your curiosity.

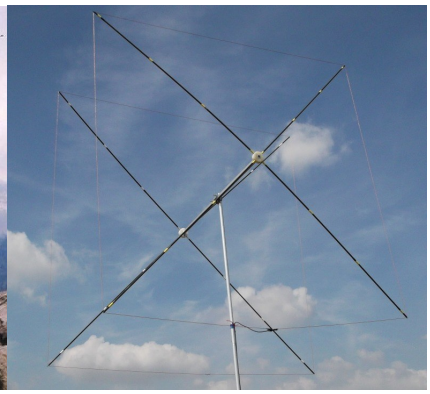
Conclusion

So, with everything you know now, what's it going to be? Depending on your circumstances, you just might find that you have very few good choices. If this article proved more confusing than helpful, I apologize for throwing too much data at you. Sometimes having more choices isn't always better. But at least now you're a little better informed.

— Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

Magnetic loop antenna

Portability of a Buddipole



Cubical quad antenna

Dear Annette

What's on your mind? Serious, humorous, technical, and thoughtful answers to your deepest, (mostly) ham-related questions.

Dear Annette:

Please forgive my stereotype, but why is it that most people who are into ham radio seem to be elderly?

Full of bash in Lehi

Dear Full:

Good, honest question! Although there have always been younger amateurs in the hobby, the dynamics of technology have changed to produce different reasons for why it seems ham radio is populated by the more mature. Previously, the sheer technical nature of ham radio involvement required no small amount of electronics experience to understand, let alone build the equipment you couldn't just purchase from Ham Radio Outlet. And today, the advent of cell phone technology has steered the attention of many younger would-be amateurs away from our old-school craft. But that's actually one of the reasons we have this club: to help introduce the younger generation to amateur radio by offering them relevance while having a little fun.

Dear Annette:

I remember a question from the exam, whose answer is the English language. Could I legally speak with my mother over the air in Portuguese, for example, if we both have ham radio licenses?

Libby in Pleasant Grove

Dear Libby:

Yes, you may speak with another licensed amateur in whatever language you please. I believe the exam question you're referring to asks about which language is acceptable to use when you ID on a phone (voice) band, and the answer is that *you must ID in English.*

Dear Annette:

If I'm in a QSO with somebody, there are times when the other person talks so long that I never get a chance to say my call sign, before I get a phone call or have to leave my radio for some reason. Should I return to the frequency later, even after he has long since gotten off the air, and say my call sign, just to satisfy the rules? Or is the FCC going to come after me no matter what I do?

Stuck in Draper

Dear Stuck:

I'm glad you pointed out that the "other person" is a *he*, and not a *she*, because after all, a YL would never do such a thing. :-) Unfortunately there are a few hams who don't remember that their PTT (push-to-talk) button also doubles as an RTL (release-to-listen) button. Because they're so certain that everybody else is as interested in their monologue as they are, they hold the frequency hostage with a presumed captive audience. Sorry to say this, but there's little you can do to interject your call sign at that point, since interfering with his transmission is a greater violation than failure to state your call sign. One thing you can try is texting or calling the other ham on his cell phone, if you have his number, but even that might take too much time for your needs. Some make it a habit of announcing their call signs with every transmission, just in case a situation like this might occur, but often that only serves to irritate others. In the end, I can only hope you learn from your friend's mistake. And BTW, the FCC won't come after you for an unintentional misstep like that.

Got a question for Dear Annette*? Send your email to* ***uvarcshack@gmail.com*** *and include your town.*

DIY

Worthwhile projects you can build on your own

Installing your own Pockrus J-pole antenna

Taking the advice of so many of your ham friends, you sunk $25 and purchased an open-stub J-pole of your very own from Carl Pockrus, and now you're ready to announce your call sign to the entire valley. That's good, because you'll soon find out how much better that gem can perform, over the stock *rubber duck* that came with your handheld radio. But where do you set it up when you want to transmit?

Assuming you're going to mount your J-pole outside, the three ways people typically mount them are on the gabled eaves, on a sewer vent pipe, or on a mast attached to or near (like you would a flagpole) your house. A few have mounted them in their attics with some success. This article discusses the gabled eave-mount approach, because it's the worst case (most involved and complicated) of all of them, but the one I recommend most for a permanent installation, to provide optimum performance and stability.

Parts list (total = $356.00, give or take):

Pockrus Joystick™ J-pole antenna $25
Channel Master™ CM-9030 eave mount $35
1/2″ rubber cable clamps $1.70 per pair (6 pairs = $10.20)
#10 X 3/4″ stainless pan-head sheet metal screws $3 for 25
4 AWG solid copper ground wire $1.50 per foot (30 feet = $45.00)
Heat shrink tubing $2 for LMR-400 (or $2 for LMR-240 / RG-8X)
Times Microwave™ LMR-400 coaxial cable with PL-259 connectors $105 for 75 feet
ABR Industries™ 1″ ground braid $25
Nashua™ Stretch & Seal self-fusing silicone tape $7
PL-259 crimp connector for LMR-400 $2.80
Alpha Delta™ TT3G50UB-HP lightning arrester $50
Three 1/2″ grounding clamps $9
10-foot X 1-3/8″ top-rail mast $13
U-bolt for 1″ pipe (1-3/8" ID) $3
11″ zip ties $11 for 100
8-foot X 1/2″ grounding rod $12
1-1/2″ zinc-plated corner brace $3

Tools list:

tape measure
LMR-400 crimpers
extension cord
soldering iron, solder, solder sucker
wrench set, crescent wrench
sharp knife (box cutter, X-Acto, etc.)
hack saw
ohmmeter
big wire cutters, small wire cutters
ladder
drill motor, drill bits, screwdriver bits, nut driver
heat gun
scissors
wire stripper
level

DIY, continued

Installing your own Pockrus J-pole

Eave-mounting the mast

Assemble the eave mount, adjusting its length so that, when mounted on the middle face of your eaves, the center is between 1-1/2 to 2 feet below the crown of your roof. Securely attach the upper support bracket of the eave mount to the center of the eaves, right in front of the crown of your roof. Be sure to mark and then drill out the holes before you drive the bracket bolts into the eaves. Depending on your roof angle (most roofs are built with a 4/12 or 5/12 pitch), cut about three or four feet off the tapered end of the top-rail mast. Loosely clamp the mast to the upper support bracket, so that you can somewhat easily slide it up and down, without it completely falling off.

Mark the location of the mounting holes so that the eave mount sits level when the holes are located near the middle face of the eaves. At the same time, lightly clamp the top-rail mast to the eave mount, so that you can stand the mast vertically level on the mount. This gets tricky, because you need to level the mount, keep the mast square with the mount, and locate the mount on the eaves, all at the same time. Drill and then bolt the mount to the eaves where you marked the holes.

Measure and drill a 5/16″ hole in the angle bracket of the J-pole to fit the 1″ U-bolt, then loosely install the U-bolt to it. Lower the loose U-bolt of the J-pole over the mast, and securely attach the J-pole to the mast, with the U-bolt, making sure that no more than 1/4″ of mast appears above the angle bracket, if you mount the mast outside the angle bracket, as in the photo on the next page. (You can optionally mount the mast inside and under the angle bracket.) Tighten the top and bottom bracket bolts that hold the mast in place. Attach one of the grounding clamps to the mast just above or below the upper support bracket (not shown.)

Thread the coax so that one end emerges between the eave face and the eave mount. Create an *RF choke* by coiling the end of the coax out of four loops that are about six inches in diameter, leaving about four inches for the connector to attach to the J-pole. Use small zip ties to maintain the coil shape of the choke. Securely connect the PL-259 connector of that end of the coax to the J-pole, and stretch-wrap about eight inches of *Stretch and Seal* completely around the connector, to prevent moisture intrusion (shown next page.)

DIY, continued

Installing your own Pockrus J-pole

Use zip ties to secure the coax to the mast, in three or four places. Route the coax under the crown of the eaves to the wall, then straight down to the ground, securing the coax with cable ties and sheet metal screws. Bolt the 4 AWG wire through the middle hole of the mast grounding clamp, and route it along the same path as that of the coax, to the ground.

Grounding the antenna

Drive the 8-foot grounding rod into the dirt directly under your antenna mast, and within a few inches of your house wall, leaving about six to eight inches showing. Attach a grounding clamp to the ground rod, about three or four inches from the top. Bolt the 4 AWG wire through the middle hole of the grounding clamp. Attach another 4 AWG wire from the same grounding clamp to the service box by routing the wire straight down from the clamp into the dirt, about four to six inches underground along the wall of your house, emerging directly under the service box.

Attach another grounding clamp to the grounding rod, then bolt the corner brace to the middle screw of the clamp. Attach the bare bolt of the lightning arrester to any available hole of the corner brace. Estimate and cut off the coax hanging from the antenna, leaving enough slack such that its connector will be installed at a location to plug it comfortably into the lightning arrester. Unscrew the ring from the crimp PL-259 connector, and cut one to two inches of heat shrink tubing. Slip the heat shrink tubing, the connector crimp sleeve, and the ring onto the cut coax.

Strip the coax (remove the coax jacket for the length of the connector, thread back the shield, and completely remove half of the dielectric.) Slip the connector onto the stripped coax, so that the tip of the center conductor is about even with the tip of the connector, then quick-solder the tip of the coax to the tip of the connector. Cut the shield back to about 1/4″ maximum. Slip the crimp sleeve over the shield and connector, so that it's flush with the connector, then crimp the sleeve. Slip the heat shrink tubing over the crimp sleeve and heat-shrink it to fit. Screw the ring back onto the connector.

DIY, continued

Installing your own Pockrus J-pole

Use your ohmmeter to test the cable for continuity. Attach the newly installed coax connector to the lightning arrester. Apply *Stretch and Seal* (or any reliable self-fusing silicone tape) around the connector, completely sealing the entire connector from air and moisture intrusion. Install a PL-259 connector to the cut end of the coax. Plug the coax connector into the other side of the lightning arrester, and weather-seal it like the first one.

Route the coax along your house, just under your siding if you have siding, all the way to the entry point (location where the coax will enter your house,) securing the coax with cable clips and sheet metal screws about every sixteen to twenty-four inches. Avoid violating stucco if at all possible, unless you have some expertise with it, because drilling into stucco will often crumble the texture.

How you get your coax into your house is not covered in these instructions, because there are so many ways of doing that. The most direct way is to drill a 1/4″ hole in the side of your house in a non-ugly location, just like the cable TV folks do, entering your house through a grommet or bushing as shown above. Another is (for newer homes) to feed the coax through the roof vent screen located at one of several places on your roof. Still another is to slide one of your windows down onto a *pass-through* that you can purchase, like this one to the left, a Comet CTC-50M.

Conclusion

Thanks to Carl, getting hold of one of the greatest VHF / UHF antennas in history is easy and inexpensive, but installing it high outdoors might not be quite so simple or cheap. As you can see, you don't have to be an electrician to mount one; you might be able to do it all by yourself, even with little or no experience. Once done properly, however, it'll bring you years of enjoyable hamming on the two most popular bands, with your audio coming through loudly and static-free on repeaters, and heard much farther away on simplex than otherwise. And when you double with somebody, you'll likely be the clear winner.

Events

What's happening in our ham radio community

Utah Valley Swapmeet

Large gathering of amateur radio enthusiasts

Less than four months until the *2018 Utah Valley Swapmeet*, sponsored by the Utah Valley Amateur Radio Club. It will be held on Saturday September 29 from 9 am to noon, in the Ponderosa Room of the Spanish Fork Fairgrounds, 475 S Main St in Spanish Fork. Entry is $5 per person or $10 per family. The typical purpose of a swapmeet is to offer buyers and sellers an opportunity to get together and buy / sell / trade, plus the chance to rub shoulders with both new and long-lost ham friends. But this swapmeet will also provide the following:

- Demonstrations of amateur radio gear, including helping you get on the air (GOTA station)
- Information on many aspects of amateur radio, including HF, digital, APRS, SOTA, portable, and much more
- Opportunity for many ham radio clubs, social groups, and associations (76ers, Utah VHF Society, UVARC, UARC, UDXA, WDARC, ARRL, etc.) to recruit members
- Chance for service organizations (SLCOARES, UCARES, TCARES, DCARES, TERT, ERC, SAG, ARC, VEC, etc.) to invite and recruit members and inform attendees
- Information about ham radio exam sessions and courses for much of Utah
- Radio programmers who could program your radio on the spot, depending on your radio model and where you live

The website for the Swapmeet is utahvalleyswapmeet.com. We're still hammering out details, but the latest info will be posted on the website, and on FB.

Day of '47 Special Event Station K7T

On Saturday July 21 from 9 am to 9 pm UVARC will be hosting a Special Event Station for the first time, this one to commemorate the Mormon pioneers as they officially entered the Salt Lake Valley in1847. Called the *Days of '47 Commemoration Special Event Station*, we've been given the special event call sign of *K7T* for the purpose and duration of this event.

We're still in the process of securing a park with a pavilion to hold this special event, but as soon as we nail it down, we'll send out emails and posts so you can be the first to know.

For those unfamiliar with how a special event station works, we'll set up an HF station, kind of like Field Day, but not on emergency power. For twelve straight hours a variety of operators take turns calling *CQ-CQ-CQ This is kilo-seven-tango CQ!*, each trying to attract attention to our special event, while a person sitting next or nearby the operator logs each confirmed QSO (contact).

After the special event is over, maybe days later, the club will send out QSL (contact confirmation) cards to those we've logged.

To carry out this special event station, we're going to need help. We need volunteers to operate the radio (license class doesn't matter), to log the contacts, to help set up the station (especially the antenna), to help take down the station, and to provide food or snacks for those involved.

Please contact any member of the club leadership if you'd like to help. Or you can email *uvarcinfo@gmail.com*

For Your Insight

Information you could use

Club meeting format

Here's the usual agenda for club meetings, at the Orem City Council Chamber Room, 56 N State St:

Talk-in frequency on the club repeaters

6:30 pm : Eyeball QSO

socialize / put faces with call signs

radio programmers available to help you

6:45 pm : Call the meeting to order

meeting lineup (agenda)

announcements / nets / awards / calendar

7:00 pm : Discussion / breakout session

discussions usually involve everybody

breakouts split into separate groups

7:45 pm : Door prizes

7:55 pm : Dismiss and tear-down

8:00 pm : *Club QSY* to Shake Makers

Something you'd like to see at the meetings?

Monthly meeting help

We're grateful for the volunteers who help with various tasks that make our club night just that much more friendly and useful to everybody. Monthly we need help with

programming radios (thanks, Loren / Ralph!)

taking photos or videos during the meeting

operating the talk-in radio

setting up tables and chairs (thanks, Heath!)

Lynx

Websites for your education and leisure

For the New Ham Radio Operator

Ham Radio Nets

DX Summit and DX Maps

76'ers Group and UVARC Group pages

SOTA and SOTAwatch

Give us your input at uvarcshack@gmail.com

Questions of the Month

Test your knowledge (answers next page)

G6AØ1 : What is the minimum allowable discharge voltage for maximum life of a standard 12 volt lead acid battery?

A. 6 volts B. 8.5 volts C. 10.5 volts D. 12 volts

E9BØ7 : How does the total amount of radiation emitted by a directional gain antenna compare with the total amount of radiation emitted from an isotropic antenna, assuming each is driven by the same amount of power?

A. The total amount of radiation from the directional antenna is increased by the gain of the antenna

B. The total amount of radiation from the directional antenna is stronger by front-to-back ratio

C. They are the same

D. The radiation from the isotropic antenna is 2.15 dB stronger than that from the directional antenna

Calendar

What's happening
(times are Mountain Time)

Utah County Ham Exam Sessions

BYU J. Reuben Clark Law School building

Sign up at HamStudy.org/sessions

Wed June 20, 7:00 to 8:45 pm
Wed July 18, 7:00 to 8:45 pm
Wed August 15, 7:00 to 8;45 pm
Sat September 15, 2:30 to 5:00 pm
Wed September 19, 7:00 to 8:45 pm
Wed October 17, 7:00 to 8:45 pm
Sat October 20, 2:30 to 5:00 pm
Sat November 17, 2:30 to 5:00 pm
Wed November 21, 7:00 to 8:45 pm

Provo One-day Technician Courses

Third Saturday Monthly at 8:00 am
Re-starting September 15
BYU Law School Bldg, First Floor

2018 Orem Ham Radio Courses

General : July 31, Aug 7, 14, 21
Technician : Sept 18, 25, Oct 2, 9

Club Meeting Calendar (6:30 pm)

Orem Council Chambers, 56 N State St

June 7	July 5*
August 2	September 6
October 4	November 1
December 6*	January 3

** Actually a potluck at 93 N 400 E*

Regular Nets

RACES Net, Thu Jun 21 8:00 pm, 147.12
Jackson Hole Net, Mon 8:00 pm, 146.76
UVARC Ladies' Net, Tue 7:00 pm, 146.78
UARC 76'ers, Wed 7:00 pm, 146.76
UVARC Youth Net, Thu 6:30 pm, 146.78
UVARC New Ham Net, Thu 7:00 pm, 146.78
CERT Net, 2nd & 4th Thu 8:00 pm, 146.78
Utah County 6 meters, Fri 8:00 pm, 50.14
6-Pack Net, Fri 9:00 pm, 50.15
Family History Net, Sat 8:00 pm, 146.78
UVARC Singles' Net, Sat 9:00 pm, 146.78
See a larger list of nets at noji.com/nets

Upcoming Contests

State QSO Parties (KY)
June 2

Summer Kids' Day
June 16, 11 am to 5 pm

State QSO Parties (WV)
June 16

Field Day
June 23 noon to 24 noon

See a larger list at noji.com/contest

Answers to the Questions of the Month

G6AØ1 : **C** (10.5 volts)

E9BØ7 : **C** (They are the same) [the word *total* is the catch : $P_{out} = P_{in}$]

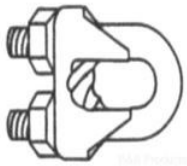
Vendors

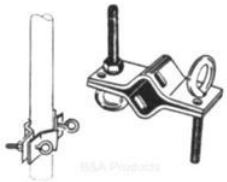
For your convenience

Home Brew Antenna Supplies and Services

MMTD is pleased to offer components to the antenna home brewer!

*Navair (Military Grade) Quality Antenna Hardware
*Insulators *Round and Square Aluminum Booms
*Two and Three Wire Spreaders *Standoffs
*Stainless Steel Clamps in Many Configurations
*Guy Plates *Antenna Grounding Switches
*Bolt Plates in Galvanized, Stainless Steel or Aluminum
*Custom Cooling Chimneys *Grounding Rods
*Delrin, Phenolic and Bakelight Components
*Turnbuckles *Stock and Custom Coils
*Dipole Centers *Aluminum Radials *Grounding Rods
Custom Machining and Welding





For information or a list
email maxfieldmachineTandD@cut.net
or call 801-830-3904

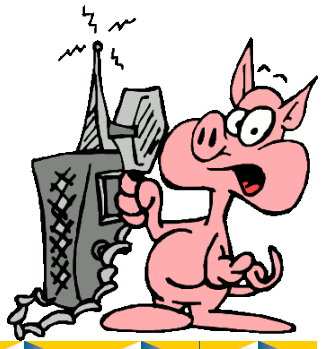
$20, open-stub "Joystick" aluminum half-wave J-pole antenna
by Carl Pockrus, WE7OMG
Half-wave performance, solid construction, weather-proof, low wind-load
Probably the best-performing outdoor antenna you can get for the price
Email at we7omg@gmail.com for purchase or information

$20, vertical "Super-Elastic Signal Stick" quarter-wave flexible antenna
by Richard Bateman, KD7BBC, of SignalStuff (and maker of HamStudy)
Super-performing antenna for your HT (handheld transceiver)
Visit SignalStuff and select SMA-Male, SMA-Female, or BNC

Want your call sign or name (or both!) embroidered on your shirt, your hoodie, your duffle? Or how about a club patch with your call sign?
by Glenna Gardner, WE7SEW
Call sign or name = $5, Both = $8, UVARC patch = $5, Patch with call = $9
Email at glenna0354@gmail.com or call / text 801-592-2503

Side of Bacon

A little ham humor



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D	M	I	C	R	O	P	H	O	N	E	C	U	R
N	Y	L	I	D	E	L	O	P	I	D	A	E	T
U	D	T	T	D	B	A	N	D	W	I	D	T	H
O	R	E	P	E	A	T	E	R	D	D	O	A	M
R	R	O	E	N	S	T	A	T	I	O	N	M	O
G	R	E	V	I	E	C	S	N	A	R	T	A	B
P	O	L	A	R	I	Z	A	T	I	O	N	W	I
P	G	R	E	C	N	A	D	E	P	M	I	O	L
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O	S	Q	T	S	R	H	I	T	C	T	C	S	S
N	P	R	O	P	A	G	A	T	I	O	N	O	C
H	T	G	N	E	L	E	V	A	W	I	B	D	D
S	I	D	E	B	A	N	D	N	H	Q	S	Y	R

GROUND
IONOSPHERE
TRANSCEIVER
AMATEUR
RST
MODULATION
SWR
TUNER
POLARIZATION
MICROPHONE
STATION
QSY
BOCODZEN
WAVELENGTH
IMPEDANCE
QSO
BANDWIDTH
REPEATER
DIPOLE
BATTERY
RADIO
PROPAGATION
ANTENNA
GORUSAE
CTCSS
FREQUENCY
MOBILE
SIDEBAND

Where everybody knows your call sign

Utah Valley Amateur Radio Club
Orem, Utah, USA

K7UVA
Phone/Text: 801-368-1865
Email: k7uva@arrl.net

Repeaters: 146.780–, 100.0
448.200–, 100.0 224.560–, 100.0

Newsletter input?
Email uvarcshack@gmail.com
Need help?
Email uvarcelmer@gmail.com

We're on the web!
uvarc.club

We are the *Utah Valley Amateur Radio Club*, a 501(c)(3) non-profit (EIN 81-360-6416) Utah corporation that was organized in an obscure Orem fire station on 02-05-2016 to provide amateur radio hobbyists in Utah County and surrounding areas a way to gather and discuss all things ham. Our primary purposes are to provide a local amateur radio resource, help new hams in their new-found adventures, and to give more experienced hams a reason to share their wealth of knowledge and wisdom in a friendly atmosphere of fellowship. We're an ARRL Affiliate and work in cooperation with the Utah VHF Society, but are not subsidiary to them, to UARC, the 76'ers, UCARES, RACES, the SCA-Team, or any other organization, although many of our members might also belong to the same.

This alleged newsletter is published every so often by the Utah Valley Amateur Radio Club, and its purpose is to convey the tone and temperament of the club, to inform and entertain its members, and to entice the rest. To join, go to uvarc.club or to www.facebook.com/groups/uvarc/ and request membership. For more information about our club or about amateur (ham) radio in general, please email or text or call us.

More than just a club, we invite you to become part of a great ham radio movement in Utah Valley

Our fearless leadership

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Orem City Emergency Manager

73